IFPRI Key Facts Series: Agriculture and Food Security

February 2018

This is the first in a series of Key Facts sheets that IFPRI will be producing based on the third and fourth Integrated Household Surveys (IHS). The purpose of the series is to present data relevant to key policy issues on agriculture, food systems, and development topics in Malawi. Other Key Facts sheets will be produced in the near future.

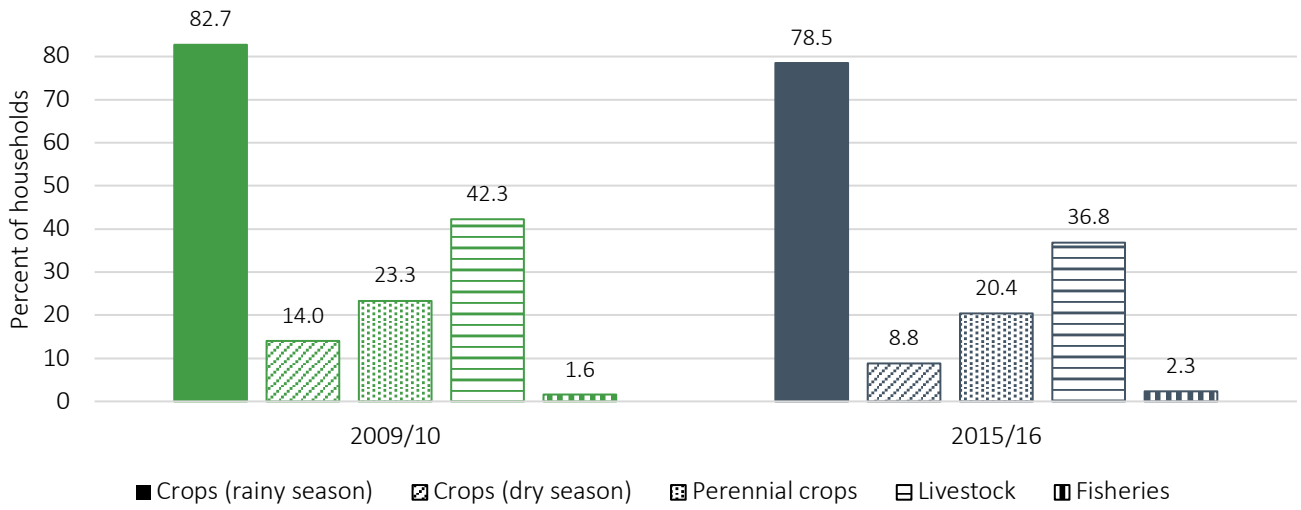
Highlights

- *The percentage of households cultivating crops in the rainy and dry seasons and rearing livestock decreased between the 2010/11 and 2015/16 agricultural years, but there was a slight increase in fisheries involvement.*
- *Median land area cultivated per agricultural household remains small and declined between the IHS3 (0.57 hectares) and IHS4 (0.45 hectares).*
- *While over two-thirds of maize plots used some inorganic fertilizer (68%), no fertilizer was applied on nearly a quarter of maize plots (22%).*
- *A dramatic decline in household food security status occurred between 2010/11 and 2016/17: the number of households defined as having "very low food security" increased from 32 to 61 percent.*

Background to the Integrated Household Surveys (IHS)

This analysis draws from the third and fourth Integrated Household Surveys (IHS3 and IHS4), conducted by the Government of Malawi's National Statistical Office (NSO) as part of the World Bank Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS- ISA) initiative. The IHS3 was conducted between March 2010 and March 2011, covering a total of 12,271 households, while the IHS4 was conducted between April 2016 and April 2017, covering 12,447 households. Both surveys used four questionnaire instruments: (1) household, (2) agriculture, (3) fisheries and (4) community questionnaires. Once appropriately weighted, the IHS surveys are representative at national, district and urban/rural levels. All values presented in this Key Facts series have been adjusted using the sampling weights provided by the NSO.

Figure 1. Agricultural activities in the 2009/10 and 2015/16 agricultural years



During the 2015/16 agricultural year, about 79 percent of surveyed households cultivated crops in the rainy season, a decrease of about 4 percentage points from the 2009/10 agricultural year (Figure 1). Only about 9 percent of households cultivated crops during the 2015/16 dry season, compared to 14 percent in the 2010/11 dry season. The percentage of households that owned livestock and the percentage of households that grew perennial/ tree crops during the 12 months preceding the 2015/16 IHS4 survey also decreased in comparison to the same period during the 2009/10 IHS3 survey. On the other hand, the percentage of households engaged in fisheries during the 12 months preceding the 2015/16 IHS4 survey increased slightly.

The median land area cultivated per agricultural household in the IHS4 was 0.45 hectares, measured using GPS devices (Table 1). This represents a decline from IHS3, when median land area cultivated was 0.57 hectares. Households in the Southern region cultivated the smallest land area, followed by households in the Northern region. In the IHS4, female-headed households cultivated smaller land areas (0.36 ha) than male-headed households (0.50 ha), although there was no difference for the dry season. While a high percentage (32%) of urban households cultivated crops, the areas under cultivation in urban areas were smaller than in rural areas. The average land area cultivated per household in IHS4 was 0.61 hectares, and the average number of plots cultivated per household in IHS4 was 1.63.

Table 1. Median land area cultivated per agricultural household (hectares) by selected characteristics.

	Rainy season		Dry season	
	IHS3	IHS4	IHS3	IHS4
Gender of household head				
Male	0.61	0.50	0.13	0.08
Female	0.49	0.36	0.12	0.08
Region				
North	0.68	0.48	0.08	0.08
Centre	0.69	0.56	0.14	0.07
South	0.49	0.38	0.11	0.11
Place of residence				
Urban	0.40	0.39	0.13	0.06
Rural	0.59	0.46	0.13	0.08
Total	**0.57**	**0.45**	**0.13**	**0.08**
Number of ag. households	10,043	9,646	1,244	888

Notes: The rainy season for IHS3 includes both 2008/09 and 2009/10, while the rainy season for IHS4 includes 2014/15 and 2015/16.

Irrigation

During the rainy season, virtually no plots used a form of irrigation (0.04%), while during the dry season, about two thirds (67.1%) did. Among the forms of irrigation used were buckets (50.9%), stream diversion (8.1%), treadle pumps (3.5%), and gravity-fed systems (2.8%).

Input subsidies

Twenty-two percent of agricultural households surveyed in IHS4 received a Farm Input Subsidy Program (FISP) coupon for either fertilizer or seed. Nearly all of those who received coupons received a fertilizer coupon, while only 9.6 percent of agricultural households received both fertilizer and seed coupons (Table 2). Just over one-fifth of households received coupons in all regions.

Table 2. Percentage of agricultural households receiving FISP coupons by type and region.

	Any coupon	Fertilizer only	Seed only	Both
North	21.8	9.1	0.0	12.7
Centre	21.8	14.6	0.3	6.9
South	22.2	10.3	0.1	11.8
Malawi	**22.0**	**12.2**	**0.2**	**9.6**

Notes: N = 9,646 agricultural households

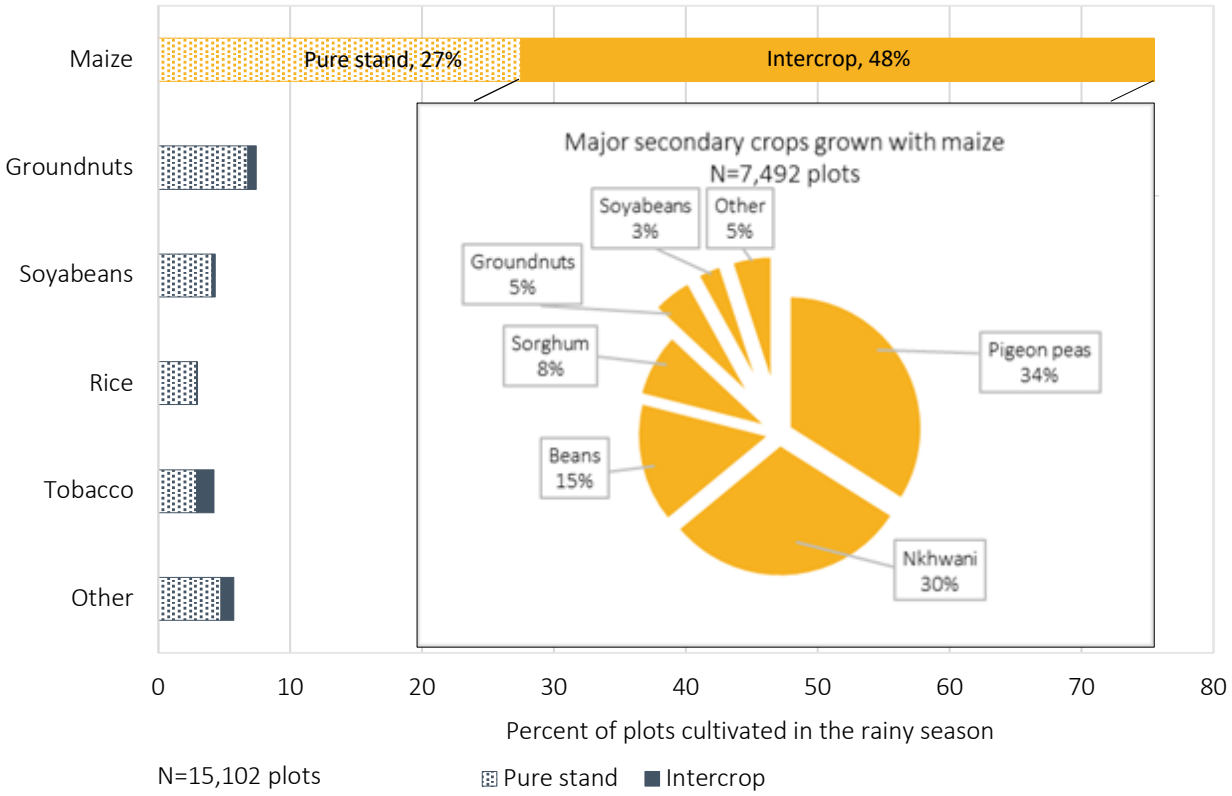
Intercropping

About half (53%) of all plots cultivated in the 2015/16 rainy season were intercropped (Figure 2). On average, two crops are grown together on intercropped plots.

Maize was cultivated on about 75 percent of all plots, and was primarily intercropped with legumes (especially pigeon peas, beans, groundnuts, and soyabeans), and *nkhwani* (pumpkin leaves, a commonly consumed vegetable in Malawi). Other crops grown include groundnuts, soyabeans, tobacco, and rice, which were overwhelmingly grown in pure stands (monocropped). Tobacco is mainly intercropped with *nkhwani* (84% of intercropped tobacco plots), followed by beans (7%).

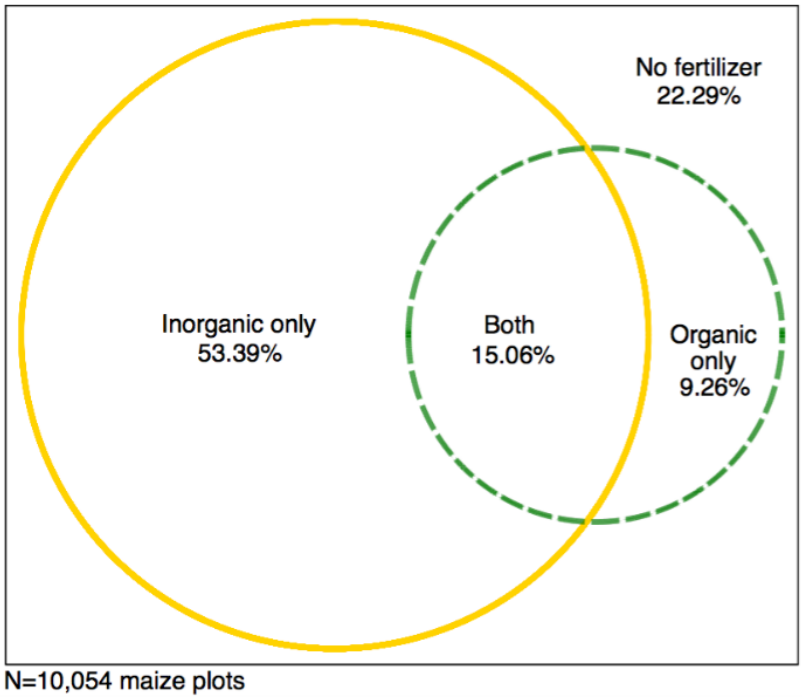
In terms of area cultivated, there was only a slight difference in the total land area that was planted as intercropped and pure stand plots. About 54 percent of the total land area cultivated was intercropped, while 46 percent were pure stand plots.

Figure 2. Major crops grown during the 2015/16 rainy season.



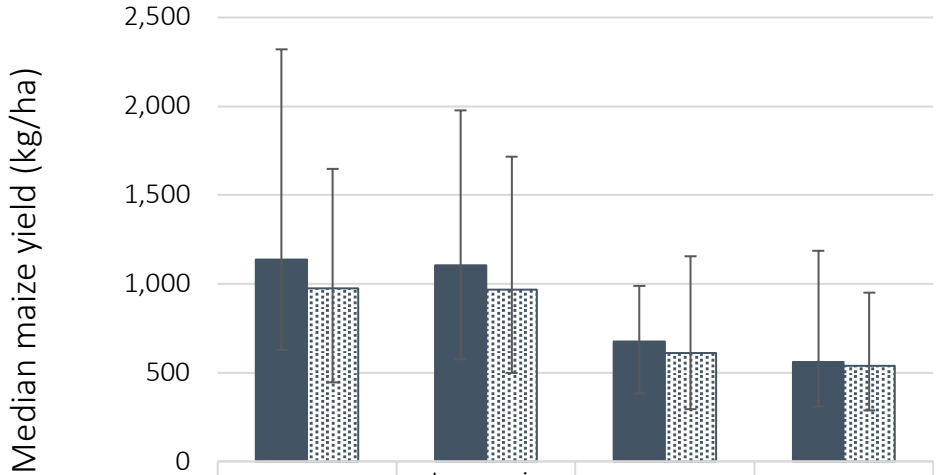
About half of the maize plots used only inorganic fertilizer (53%), while 9 percent of the maize plots used only organic fertilizer (Figure 3). The percentage of maize plots on which both organic and inorganic fertilizer was applied was 15 percent, bringing the percentage of maize plots that did not use any fertilizer at all to 22 percent.

Figure 3. Fertilizer application on rainy season maize plots, 2015/16.



Overall, there was little difference in maize yield on pure stand and intercropped plots (Figure 4). There was also little difference in maize yield on plots that applied only organic fertilizer and those that did not apply any fertilizer. However, maize yields were higher on plots where inorganic fertilizer was applied in comparison to those on which no fertilizer was applied.

Figure 4. Median maize yield with and without fertilizer on rainy season plots, 2015/16.

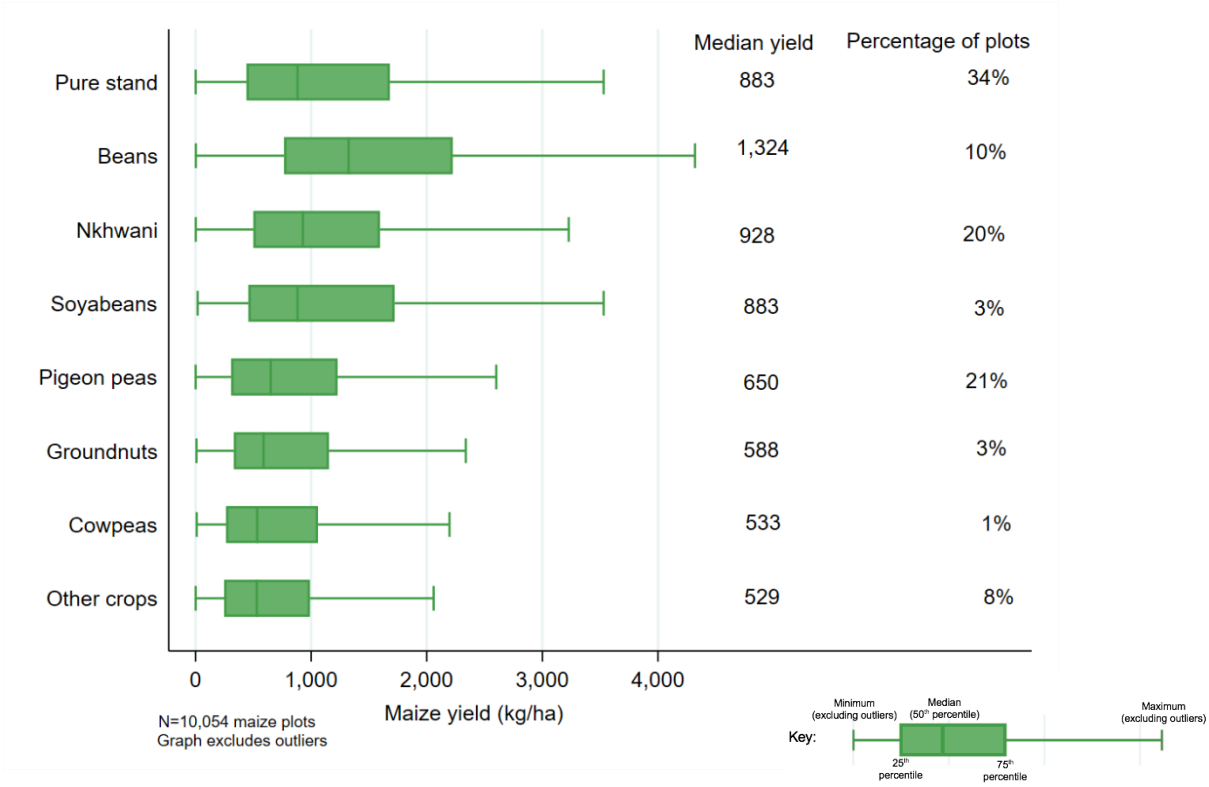


	Both	Inorganic only	Organic only	Neither
Pure stand (N=3,123)	1,136	1,103	674	562
Intercropped (N=6,931)	973	966	610	537

N= number of plots; error bars represent 25th and 75th percentiles

Of the intercropped maize plots, median yields were highest on plots where maize was intercropped with beans (1,324 kg/ha), followed by intercropping with *nkhwani* (928 kg/ha) and soyabeans (883 kg/ha) (Figure 5). Median yield on pure stand plots was also 883 kg/ha. Overall, median maize yields were highest in the Central region (1,074 kg/ha), followed by the Northern region (890 kg/ha), with the lowest yields in the Southern region (624 kg/ha). On intercropped plots, maize yields were highest in the Central region for all secondary crops apart from pigeon peas, which produced the highest maize yields in the Northern region. Across all the regions, intercropping with beans produced the highest maize yields.

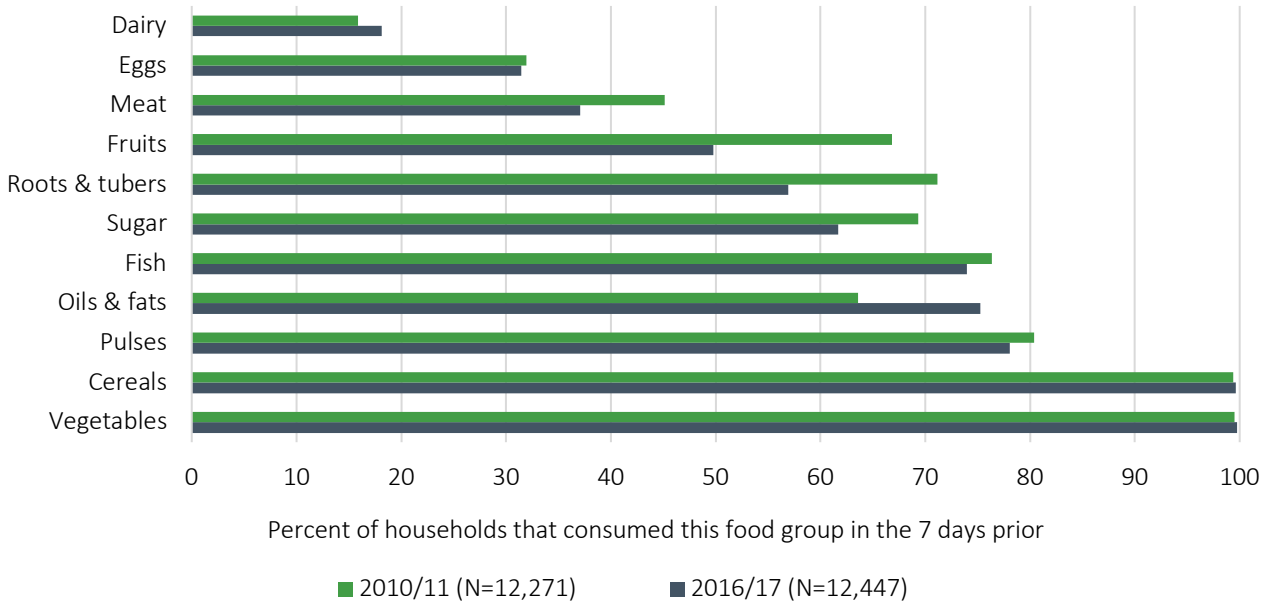
Figure 5. Maize yield on pure stand and intercropped rainy season plots



Food security

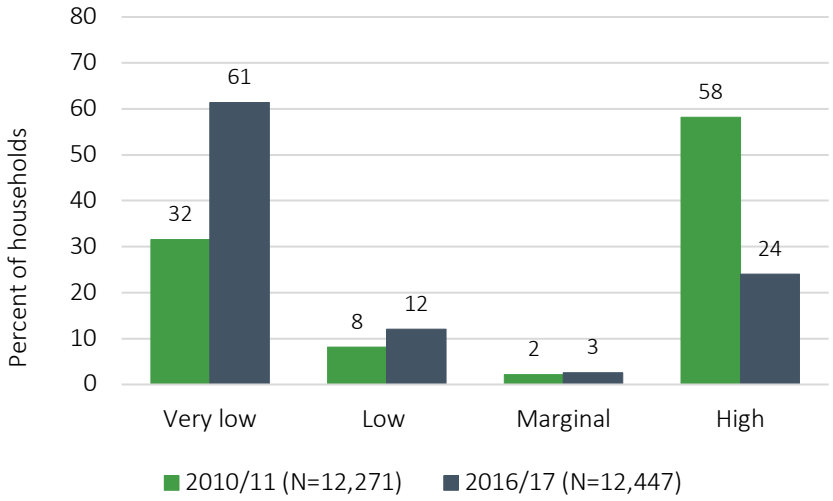
Figure 6 shows the percentage of households that ate a particular food group in the 7 days prior to their IHS interview. Between 2010/11 and 2016/17, there were notable declines in the percentage of households that reported consuming fruits, roots and tubers, sugar and meat. The decline in meat consumption, combined with smaller declines in consumption of pulses and fish, suggests decreased protein intake. Declines in root and tuber consumption were driven by a sharp decline in the percentage of households consuming cassava, from 43 percent in 2010/11 to 25 percent in 2016/17.

Figure 6. Household consumption of major food groups, 2010/11 and 2016/17



Dramatic declines in household food security status occurred between 2010/11 and 2016/17, the second consecutive poor agricultural year (Figure 7). The number of households defined as having very low food security nearly doubled during this time period; in 2016/17, well over half of Malawian households sampled (61%) suffered from very low food security.

Figure 7. Household food security status



Very low food security is defined by multiple indications of disrupted eating patterns and reduced food intake, as well as reductions in food quality, variety, quantity and frequency of food consumed. Households reported restricting adults' food intake to allow small children to eat, or relying on assistance from friends and relatives. There was also a sharp decline in the percentage of households experiencing high food security.

Summary and next steps

- *The percentage of households cultivating crops in the rainy and dry seasons, and those rearing livestock decreased between 2010/11 and 2015/16. The percentage of households cultivating engaged in fisheries increased slightly.*
- *Median land area cultivated per household declined from 0.57 hectares in IHS3 to 0.45 hectares in IHS4.*
- *Irrigation is rarely used in the rainy season. In the dry season, half of those who reported using irrigation used buckets as their primary irrigation method.*
- *Despite large investments in the Farm Input Subsidy Programme (FISP) and distribution of subsidized inorganic fertilizer, nearly a quarter of maize plots cultivated (22%) had no fertilizer applied, and an additional 9 percent of maize plots were cultivated using only organic fertilizer.*
- *Intercropping, which can provide households with additional sources of income and nutrition, was practiced on just over half of all plots cultivated in the 2015/16 rainy season (53%). The most common intercrops were pigeon peas and nkhwani, followed by beans.*
- *Median (50th percentile) and mean (average) maize yields remain low (830 and 1,281 kg/ha, respectively). However, the most productive maize farmers were able to attain yields exceeding 3,500 kg/ha.*
- *Median maize yields were highest where inorganic and organic fertilizer were used together, followed by plots where only inorganic fertilizer was used. Maize yields were also higher when plots were intercropped with beans and nkhwani, relative to pure stand (monocrop) maize.*
- *Following two consecutive years of poor harvests, there was a sharp increase in the number of households with very low food security in 2016/17. The percentage of households that consumed fruits, roots and tubers, sugar, meat, pulses, and fish also declined.*

Note that this Key Facts sheet represents a small fraction of the analyses that can be conducted using the IHS data. In the coming months, IFPRI Malawi plans to produce further Key Facts sheets on nutrition, social safety nets, and youth & employment. Please visit the IFPRI Malawi website to stay up to date on Key Facts sheets and other outputs: massp.ifpri.info

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